

CLAIMS

SUB A1 1. A method for the formation of a color image which comprises the steps of forming an electrostatic latent image in accordance with an electrophotographic process, visualizing said electrostatic latent image by a developer to form a multicolored toner image whereby each monochromatic color toner image is formed by a mutually independent developing step, and superposing then the resulting monochromatic toner images with one another to form a multicolored toner image, and in which method a toner used in each developing step contains an external additive, the addition amount of the external additive to a non-added toner containing no external additive is within the range of 1.5 to 10.0 parts by weight on the basis of 100 parts by weight of said non-added toner, and the aggregation degree of said toner is within the range of 30 to 80%, and the change ratio of the aggregation degree satisfies the following formula:

$$0.8 \leq (\text{initial aggregation degree}) / (\text{aggregation degree after 20 hours of no-load revolution of developing portion}) \leq 1.2.$$

SUB 2. A color image formation method according to claim 1 wherein a mixture of particles having a mean particle diameter of 30 to 100 nm and particles having a mean particle diameter smaller than the former is used as said external additive.

3. A color image formation method according to claim 1, wherein said external additive is inorganic fine particles, polymeric fine particles or a mixture thereof.

4. A color image formation method according to claim 3, wherein said inorganic fine particles are fine particles selected from the group consisting of silica, alumina, titanium oxide, barium titanate, magnesium titanate, calcium titanate, strontium titanate, zinc oxide, tin oxide, silica sand, clay, mica, diatomaceous earth, chromium oxide, cerium oxide, iron oxide red,

antimony trioxide, magnesium oxide, zirconium oxide, barium sulfate, barium carbonate, calcium carbonate, silica carbide and silicon nitride.

5 5. A color image formation method according to claim 4, wherein said inorganic fine particle have a primary particle diameter of 0.005 to 2 μm and the specific surface area, measured by the BET method, of 20 to 500 m^2/g .

10 6. A color image formation method according to claim 3, wherein said polymeric fine particles are fine particles selected from the group consisting of polystyrene, copolymers of methacrylic acid ester and acrylic acid ester, polycondensates of silicone and benzoguanamine, nylon and thermosetting resins.

15 7. A color image formation method according to claim 1, wherein said developer is a nonmagnetic one-component developer.

20 .8. A color image formation method according to claim 1, in which monochromatic toner image of yellow, magenta, cyan and black each is formed by the following steps:

 (1) charging step for imparting photosensitivity to an image support as an electrostatic recording medium;

25 (2) exposing step of applying image formation exposure to the image support, and forming and recording an electrostatic latent image;

30 (3) developing step of causing the electrostatic latent image recorded on the image support to electrically attract a developer, and physically visualizing the electrostatic latent image;

35 (4) transferring step of serially transferring the visualized toner image on the image support to the recording medium, and superposing the visualized toner images with one another; and

 (5) image fixing step of heating and fixing the transferred image on the recording medium.

SUB 9. A method for the formation of a color image which comprises the steps of forming an electrostatic latent image in accordance with an electrophotographic process, visualizing said electrostatic latent image by a developer to form a multicolored toner image whereby each monochromatic color toner image is formed by a mutually independent developing step, and then superposing the resulting monochromatic toner images with one another to form a multicolored toner image, and in which method a toner used in each developing step contains an external additive, the addition amount of the external additive to a non-added toner containing no external additive is within the range of 1.5 to 10.0 parts by weight on the basis of 100 parts by weight of said non-added toner, and the change ratio of the electrostatic charge amount of said toner on an image support for forming and visualizing said electrostatic latent image satisfies the following formula:

$$1.0 \leq (\text{initial charge amount}) / (\text{charge amount after 20 hours of no-load revolution of developing portion}) \leq 1.5.$$

SUB 10. A color image formation method according to claim 9, wherein a mixture of particles having a mean particle diameter of 30 to 100 nm and particles having a mean particle diameter smaller than the former is used as said external additive.

11. A color image formation method according to claim 9, wherein said external additive is inorganic fine particles, polymeric fine particles or a mixture thereof.

12. A color image formation method according to claim 11, wherein said inorganic fine particles are fine particles selected from the group consisting of silica, alumina, titanium oxide, barium titanate, magnesium titanate, calcium titanate, strontium titanate, zinc oxide, tin oxide, silica sand, clay, mica, diatomaceous earth, chromium oxide, cerium oxide, iron oxide red,

antimony trioxide, magnesium oxide, zirconium oxide, barium sulfate, barium carbonate, calcium carbonate, silica carbide and silicon nitride.

5 13. A color image formation method according to claim 12, wherein said inorganic fine particle have a primary particle diameter of 0.005 to 2 μm and the specific surface area, measured by the BET method, of 20 to 500 m^2/g .

10 14. A color image formation method according to claim 11, wherein said polymeric fine particles are fine particles selected from the group consisting of polystyrene, copolymers of methacrylic acid ester and acrylic acid ester, polycondensates of silicone and benzoguanamine, nylon and thermosetting resins.

15 15. A color image formation method according to claim 9, wherein said developer is a nonmagnetic one-component developer.

20 16. A color image formation method according to claim 9, in which monochromatic toner image of yellow, magenta, cyan and black each is formed by the following steps:

(1) charging step for imparting photosensitivity to an image support as an electrostatic recording medium;

25 (2) exposing step of applying image formation exposure to the image support, and forming and recording an electrostatic latent image;

30 (3) developing step of causing the electrostatic latent image recorded on the image support to electrically attract a developer, and physically visualizing the electrostatic latent image;

(4) transferring step of serially transferring the visualized toner image on the image support to the recording medium, and superposing the visualized toner images with one another; and

35 (5) image fixing step of heating and fixing the transferred image on the recording medium.

Add
13